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EXAMINER	
BLACKMAN, ROCHELLE ANN J	
ART UNIT	**PAPER NUMBER**
2851	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/760,302	REICHERT, JAMES	
	Examiner	Art Unit	
	Rochelle Blackman	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1, 2, 5-8 and 26-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9-16* is/are allowed.

6)☒ Claim(s) *1,2,5-8 and 26-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 6, 16-24, 26, 27, and 29-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Taylor et al. (U.S. Patent No. 3,560,641).

Regarding claim 1, Taylor discloses a projection system (see FIGS. 4 and 7) for projecting a three-dimensional object (see *drops* in FIG. 7 and col. 7, lines 43-63) see within a defined volume (see area between elements 85 and 87 in FIG. 7), the projection system comprising: a holding tank (for example, see 30 of FIG. 1) for storing a reservoir containing a projection medium (see *liquid substance* in col. 4,lines 3-4); a projector (see FIG. 4 and 85 of FIG. 7) including a plurality of valves (for example, see 20, 22, 24, 26 of FIG. 1 and 40 of FIGS. 3 and 4 and also see *...a plurality of closely arranged arrays, indicated by the general reference number 85...each array consist of a large number of individual drop units...* in col. 7, lines 45-49) for projecting the projection medium from the holding tank; an image data computation module (see FIG. 4, 85 of FIG. 7, and col. 7, line 43 to col. 8, line 46, especially *data matrix*, *memory*, and *buffer input* in col. 8, lines 40-46) for calculating cross-sections for the three-dimensional object (the "cross-sections" for the "three-dimensional object" are calculated by timing

circuit along with the *data matrix*, *memory*, and *buffer input* and further control and operate the drop generating units or "valves" of element 85 to form the "three-dimensional object") a projection communication and control module (also see col. 7, line 43 to col. 8, line 46, especially *data matrix*, *memory*, and *buffer input* in col. 8, lines 40-46) for communicating the calculated cross-sections for the three-dimensional object to the projection unit in order to control the valves; an illumination device (see 90 and 95 of FIG. 7) for illuminating the projected medium for a fixed time period, wherein the projected medium forms the three-dimensional object, and the three-dimensional object is viewable circumferentially (see *drops* forming the three-dimensional pattern image in FIG. 7); and a receiving mechanism (see 87 of FIG. 7) for receiving the projection medium after illumination.

Regarding claim 2, Taylor discloses the projection system wherein the projection medium comprises a liquid (see *liquid substance* in col. 4,lines 3-4).

Regarding claim 5, Taylor discloses the projection system further comprising an illumination device control unit (see 95 of FIG. 7) for controlling operation of the illumination device.

Regarding claim 6, Taylor discloses the system wherein the receiving mechanism includes a reclamation tray (see 87 of FIG. 7) for reclaiming the projection medium for further use.

Regarding claim 16, Taylor discloses a projection system (see FIGS. 4 and 7) for projecting a three-dimensional object (see *drops* in FIG. 7 and col. 7, lines 43-63) within

a defined volume (see area between elements 85 and 87 in FIG. 7), the projection system including: imaging data computation apparatus (see FIG. 4, 85 of FIG. 7, and col. 7, line 43 to col. 8, line 46, especially *data matrix*, *memory*, and *buffer input* in col. 8, lines 40-46) for computing imaging data by calculating cross-sections for the three-dimensional object (the "cross-sections" for the "three-dimensional object" are calculated by timing circuit along with the *data matrix*, *memory*, and *buffer input* and further control and operate the drop generating units or "valves" of element 85 to form the "three-dimensional object"); communication tools (also see col. 7, line 43 to col. 8, line 46, especially *data matrix*, *memory*, and *buffer input* in col. 8, lines 40-46) for communicating the imaging data to a projector (also see FIG. 4 and 85 of FIG. 7) that disperses a projection medium (see *liquid substance* in col. 4,lines 3-4) based on the communicated imaging data; and an illumination control unit (see 95 of FIG. 7 and col. 8, lines 3-20) that controls an illumination device (see 90 of FIG. 7) for illuminating the dispersed medium, wherein the projection medium forms the three-dimensional object, and the three-dimensional object is viewable circumferentially (see *drops* forming the three-dimensional pattern image in FIG. 7).

Regarding claim 17, Taylor discloses the projection system wherein the communication tools control a plurality of valves (for example, see 20, 22, 24, 26 of FIG. 1 and 40 of FIGS. 3 and 4 and also see *...a plurality of closely arranged arrays, indicated by the general reference number 85...each array consist of a large number of individual drop units...* in col. 7, lines 45-49) within the projector to disperse the projection medium.

Regarding claim 18, Taylor discloses the projection system wherein the imaging data computation apparatus computes multiple discrete layers of imaging data (see the plurality of layers of drops forming the three-dimensional pattern image in FIG. 7).

Regarding claim 19, Taylor discloses the projection system further comprising a reclamation system (see 87 of FIG. 7) for reclaiming projection medium after illumination.

Regarding claim 20, Taylor discloses the projection system further comprising a disposal (see 87 of FIG. 7) for disposing of the projection medium after illumination.

Regarding claim 21, Taylor discloses the projection system further comprising a holding tank (see 30 of FIG. 1) for storing a reservoir containing a projection medium.

Regarding claim 22, Taylor discloses the projection system further comprising a projector see FIG. 4 and 85 of FIG. 7) including a plurality of valves (for example, see 20, 22, 24, 26 of FIG. 1 and 40 of FIGS. 3 and 4) for projecting the projection medium.

Regarding claim 23, Taylor discloses the projection system wherein the illumination device comprises a strobe light (see 90 of FIG. 7).

Regarding claim 24, Taylor discloses the projection system wherein the projection medium comprises a liquid (see *liquid substance* in col. 4,lines 3-4).

Regarding claim 26, Taylor discloses a method (see function of elements in FIGS. 1, 3, 4, and 7) for projecting a three-dimensional object (see *drops* in FIG. 7 and col. 7, lines 43-63) within a defined volume (see area between elements 85 and 87 in

FIG. 7), the method comprising: storing imaging data for an image as a plurality of layers of imaging data (see function of elements in FIG. 4, see function of 85 in FIG. 7, and see col. 7, line 43 to col. 8, line 46, especially function of *data matrix*, *memory*, and *buffer input* in col. 8, lines 40-46); communicating a layer of imaging data to a projector having a plurality of valves (for example, see 20, 22, 24, 26 of FIG. 1 and 40 of FIGS. 3 and 4 and also see *...a plurality of closely arranged arrays, indicated by the general reference number 85...each array consist of a large number of individual drop generating units...* in col. 7, lines 45-49) that projects a projection medium based upon the communicated imaging data (also see function of elements in FIG. 4, see function of 85 in FIG. 7, and see col. 7, line 43 to col. 8, line 46, especially function of *data matrix*, *memory*, and *buffer input* in col. 8, lines 40-46); and controlling an illumination source (see 90 and 95 of FIG. 7) to illuminate the projection medium, wherein the projection medium forms the three-dimensional object, and the three-dimensional object is viewable circumferentially (see *drops* forming the three-dimensional pattern image in FIG. 7).

Regarding claim 27, Taylor discloses the method further comprising computing imaging data by calculating cross-sections for the image, wherein the cross-sections represent the plurality of layers of imaging data, and transmitting the imaging data to the projector to control the valves (see col. 7, line 43 to col. 8, line 46 - the "cross-sections" for the "image" are calculated by timing circuit along with the *data matrix*, *memory*, and *buffer input* and further control and operate the drop generating units or "valves" of element 85 to form the "image").

Regarding claim 29, Taylor discloses the method further comprising controlling a strobe light (see 90 of FIG. 7) for illumination of the projection medium.

Regarding claim 30, Taylor discloses the method further comprising reclaiming the projection medium for reuse after illumination (see function of 87 in FIG. 7).

Regarding claim 31, Taylor discloses the method further comprising disposing of the projection medium after illumination (see function of 87 in FIG. 7).

Regarding claim 32, Taylor discloses the method further comprising filling a holding tank with the projection medium (for example, see function of 30 in FIG. 1).

Regarding claim 33, Taylor discloses a computer-readable medium (see *memory* in col. 8, lines 40-46) having computer-executable instructions for performing the method recited in clam 26.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claim 7 us rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (U.S. Patent No. 3,560,641) in view of Kataoka et al. (U.S. Patent No. 5,270,752).

Taylor discloses the claimed invention except for the receiving mechanism including "a drain".

Kataoka teaches providing a receiving mechanism that includes a drain (see 42 of FIG. 4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the "receiving mechanism" of the "projection system" of the Taylor reference with a "drain", as taught by Kataoka for the purpose of discarding unwanted "projection medium" (see col. 3, lines 57-62).

2. Claims 8 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (U.S. Patent No. 3,560,641) in view of Johnson et al. (U.S. Patent No. 6,187,394).

Taylor discloses the claimed invention for the strobe light being mounted to "a face of the projector".

Johnson teaches providing a strobe light (see 264 of FIG. 3) mounted to a face of a projector (see 204 of FIG. 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to mount the strobe light to "a face of the projector" of the Taylor reference, as taught by Johnson for purpose of concealing the strobe light from the view of observers, thus providing a more compact and aesthetically pleasing system.

Allowable Subject Matter

1. Claims 9-15 are allowed.

2. The following is a statement of reasons for the indication of allowable subject matter:

Claim 9 has been found to be allowable because the prior art of record either alone or in combination neither discloses nor makes obvious the method comprising the particular method step of opening selected valves based on the image data, in combination with the other particular combination of features recited in claim 9.

Claims 10-15 have been found to be allowable because they depend from claim 9.

Response to Arguments

Applicant's arguments filed October 12, 2006 have been fully considered but they are not persuasive, with respect to claims 1-, 2, 5-8, and 16-33.

Applicant argues on pgs 9-11, under **REMARKS/ARGUMENTS**:

> Applicant respectfully submits that independent claims 1, 9, 16, and 26 are allowable over Taylor. With respect to independent claim 1, Taylor fails to describe, among other things "an image data computation module for calculating cross-sections for the three-dimensional object." With respect to independent claim 9, Taylor fails to describe, among other things, "computing image data by calculating cross-sections for the three dimensional object and transmitting the image data to the projector to control the valves." With respect to independent claim 16, Taylor fails to describe, among other things, "imaging data computation apparatus for computing imaging data by calculating cross-sections for the three-dimensional object." With respect to independent claim 26, Taylor fails to describe, among other

things, "storing imaging data for an image as a plurality of layers of imaging data."

With respect to claims 1, 9, and 16, Taylor fails to describe, among other things, the claimed requirement of calculating cross-sections that represent the three-dimensional object. Column 7, line 43-column 8, line 2, column 8, lines 21-30, FIG. 4, and FIG. 7 are relied upon to anticipate the claimed image computation. However, the cited portions of Taylor describe a timing circuit that controls the frequency at which drops are generated. While Taylor projects a three-dimensional object; Taylor fails to anticipate the claimed embodiment because the claimed embodiment utilizes cross-section of three-dimensional object data to control the valves that project the projection medium. At best, Taylor, at FIG. 4, column 5, lines 30-40 and column 8, lines 12-25 describes a control and timing circuit for valves and lights. The control and timing circuits are utilized to allow an observer to change the three-dimensional shape of an object.

Unlike Taylor, the claimed embodiment processes the image data to form three- dimensional objects by calculating cross-sections that represent image data, which a projector utilizes to control valves of a projector that projects the projection medium. Taylor describes a timing circuit that alters the frequency of drop generating units. Taylor does not describe expressly or inherently the claimed calculation of cross-sections for the three-dimensional object. Accordingly, for at least the foregoing reasons, the anticipation rejection of claims 1, 9, and 16 should be withdrawn.

With respect to independent claim 26, Taylor fails to describe, among other things, the claimed requirement of storing a plurality of layers that represent an image. Column 7, line 43- column 8, line 2, column 8, lines 21-30, FIG. 4, and FIG. 7 are relied upon to anticipate the claimed image computation. Applicant respectfully disagrees. As discussed above, the cited portions of Taylor describes controlling a frequency associated with a plurality of drop generating units to generate a three-dimensional object. Additionally, Taylor, at FIG. 5 and column 8, lines 40-45 discloses a memory that stores a data-matrix that controls the switching means of the drop generating units. At best, Taylor discloses storing the images in matrix memory that is utilized to control a printing an image on paper. Taylor fails to describe storing the images as layers that control release of the projection medium that forms the three-dimensional object.

> Unlike Taylor, the claimed embodiment expressly requires storing a plurality of layers that represent the image data. The layers of the image data are utilized to control the projector. Taylor describes storing each character of an image in an image matrix, which is utilized to control the drop generating units. Taylor does not fairly describe storing layers that represent the image data. Accordingly, for at least the foregoing reasons, the anticipation rejection of claim 26 should be withdrawn.

Examiner disagrees and maintains Taylor discloses the "claimed" invention. Yes, Taylor does describe a timing circuit that controls the frequency at which drops are generated, as stated by applicant. Since the timing circuit controls the frequency at which the drops are generated, the timing circuit is considered to be a controller or "control module". The timing circuit is therefore, considered to be, along with the data matrix, memory and buffer input described in col. 40-45, the "image data computation module" and the "projection communication and control module" of claim 1, the "image data computation apparatus" and "communication tools" of claim 16, and can perform the method steps of "storing imaging data" for an image as "plurality of imaging layers of imaging data" and "communication a layer of imaging data" of claim 26. The "cross-sections" that represent the "three-dimensional object" are considered to be calculated by the timing circuit along with the data matrix, memory, and buffer input, and further, control and operate the drop generating units or "valves" of element 85 to form the "three-dimensional object". Accordingly, Taylor still reads on the "claimed" invention.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rochelle Blackman whose telephone number is (571) 272-2113. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RB

William Perkey
Primary Examiner